

PATENT SPECIFICATION



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COMPLETE SPECIFICATION.

Improvements in or relating to the Manufacture of Lacquers, Films, Plastic Masses and the like.

We, DEUTSCHE HYDRIERWERKE AKTIENGESELLSCHAFT, a Joint Stock Company organised under German Law, of Kanistrasse 163, Berlin-Charlottenburg, 5 Germany, and of Rodleben, bei Rossau, Anhalt, Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in 10 and by the following statement :—

The present invention relates to improvements in or relating to the manufacture of lacquers, films, plastic masses and the like having cellulose ester bases.

15 The use of esters of organic dicarboxylic acids as softening and gelatinising agents for lacquers and plastic masses of cellulose esters is already known. Thus for this purpose hitherto adipic acid and

20 phthalic acid esters have frequently been used which within certain limits exhibit satisfactory softening and gelatinising properties without however entirely satisfying the requirements placed on such products.

25 The action of softening and gelatinising agents in the film is not finally a question of the solvent properties of these agents which impart homogeneity and plasticity to the films, plastic masses or the like. These properties are however only present to a limited extent in the case of the known softening and gelatinising agents especially when it is a question of working up cellulose esters 30 of the type of acetyl cellulose.

Now surprisingly in the esters of hydroxyl containing aliphatic polycarboxylic acids and mono or polynuclear hydroaromatic alcohols a group of 40 softening and gelatinising agents has been found which possesses very good plasticising properties and above all are characterised by outstanding solvent powers so that they can be employed with great advantage for the preparation of lacquers, plastic masses and films of cellulose esters especially of acetyl cellulose. As alcoholic components of the esters, are to be considered the mono or polynuclear

45 hydroaromatic alcohols such for example as the hydrogenated phenols, naphthols or also terpene-like alcohols whereby a certain variation in the properties of the

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esters only arises in so far as the esters with higher molecular alcohols possess a 55 somewhat lower solvent power to make up for which however they impart to the products produced with them a greater flexibility (fluidity). Esters of the kind mentioned are for example malic acid dicyclohexyl ester, tartaric acid dimethyl cyclohexyl ester, tartaric acid didecydro- β -naphthyl ester, malic acid dimethyl ester, citric acid tricyclohexyl ester and the like.

The advantageous properties of the said esters as softening and gelatinising agents are probably also to be ascribed to the hydroxyl groups contained in the acid components which perhaps bring about an 70 increase of the solvent power of these esters.

In order that the invention may be well understood the following examples will be given by way of illustration only. 75

EXAMPLE 1.

50 parts of acetyl cellulose and 20 parts of tartaric acid dimethyl cyclohexyl ester are dissolved in 350 parts of lactic acid ethyl ester and 100 parts of toluene are 80 added. After spreading and drying, the lacquer obtained gives an acetyl cellulose film of excellent homogeneity and high flexibility.

EXAMPLE 2.

25 parts of acetyl cellulose with addition of 12 parts of tartaric acid didecyclohydro- β -naphthyl ester and 6 parts of tri-cresyl phosphate are dissolved in a solvent mixture of 120 parts of ethyl alcohol and 55 parts of acetone with addition of 15 parts of toluene. After pouring out and evaporating off the solvent, the product obtained gives an acetyl cellulose film of high elasticity and good resistance to 95 atmospheric influences.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we 100 claim is :—

1. A method of manufacturing lacquers, films, plastic masses and the like from cellulose esters characterised by the use as softening, gelatinising and like 105 agents of one or more esters of hydroxyl

containing, aliphatic polycarboxylic acids and mono or polynuclear hydroaromatic alcohols with or without other softening or like agents.

5 2. A method as claimed in Claim 1 in which one or more of the following esters is/are employed: malic acid dicyclohexyl ester, tartaric acid dimethyl cyclohexyl ester, tartaric acid didecahydro- β -naphthyl ester, malic acid dimethyl ester, citric acid tricyclohexyl ester.

10 3. A method of manufacturing lacquers, films plastic masses and the like from cellulose esters especially acetyl cellulose substantially as described.

15 4. Lacquers, films, plastic masses and the like having a base of cellulose esters and containing as softening, gelatinising and like agents one or more esters of hydroxyl containing aliphatic polycar-

boxlic acids and mono or polynuclear hydroaromatic alcohols.

5. Lacquers, films, plastic masses and the like as claimed in Claim 5 containing one or more of the following esters:— 25
malic acid dicyclohexyl ester, tartaric acid dimethyl cyclohexyl ester, tartaric acid didecahydro- β -naphthyl ester, malic acid dimethyl ester, citric acid tricyclohexyl ester.

6. Lacquers, films, plastic masses and the like having a cellulose ester base, substantially as described. 30

Dated this 19th day of November, 1934.

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